



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>6</sup> : <b>G06T 1/00, B25J 9/16, G01S 5/16</b>		A1	(11) International Publication Number: <b>WO 99/21134</b>
			(43) International Publication Date: 29 April 1999 (29.04.99)
(21) International Application Number: PCT/SE98/01914		(81) Designated States: JP, US, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).	
(22) International Filing Date: 22 October 1998 (22.10.98)			
(30) Priority Data: 08/955,766 22 October 1997 (22.10.97) US		Published With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.	
(71) Applicant (for all designated States except US): SPECTRA PRECISION AB [SE/SE]; P.O. Box 64, S-182 11 Danderyd (SE).			
(72) Inventors; and (75) Inventors/Applicants (for US only): HERTZMAN, Mikael [SE/SE]; Skansvägen 58, S-191 43 Sollentuna (SE). BROWN, Troy, Lane [US/US]; 30 Indian Hill Trail, Crystal Lake, IL 60012 (US).			
(74) Agents: FORSSELL, Gunilla et al.; Albihns Patentbyrå Stockholm AB, P.O. Box 5581, S-114 85 Stockholm (SE).			

(54) Title: CONTACTLESS MEASURING OF POSITION AND ORIENTATION

## (57) Abstract

The invention relates to a method and a device for contactless or touch-free measurement of a tool by means of imaging area means (4, 5). Processing means (30) makes calculations based on image points on the tool, imaged onto the imaging area means. Optics (41, 42; 51, 52) presents the image of the image points on the tool on the imaging area means, the processing means (30) being adapted to calculate the momentary position and/or orientation along at least one axis of the tool making use of the image points. A number of measuring elements and/or markers (8, 9; 13-16; 20-23; 26-28) has predetermined mutual positions and are provided on the tool. Each measuring element and/or marker comprises at least one measuring point. At least one of the points is identifiable. Each measuring element and/or marker to be used as position and/or orientation indicating means has a size making it restorable by the processing means even if a part of it on the tool is obscured for the image area means, for example by dust.

FORWARDS ↑

